

Substitute Specification – Clean Version

WHAT IS CLAIMED IS:

1. A sensor for analysis of a fluid sample comprising:
a sample cavity for accepting sample fluid;
at least one test region disposed along said sample cavity; and
5 at least one vent for venting said sample cavity, said at least one vent having at least one sample guide edge for guiding said sample fluid to said at least one test region.
2. The sensor of claim 1 having a plurality of vents having aligned sample guide edges for guiding said sample fluid toward said test region.
- 10 3. The sensor of claim 2 wherein two vents are square-shaped and wherein said test region is located between sample guide edges provided on separate zones of said two vents.
4. The sensor of claim 1 wherein said at least one vent comprises two staggered vents spaced from each other to form a fluid pathway within said sample cavity.
15
5. The sensor of claim 4 wherein said fluid pathway is a tortuous fluid pathway having at least one turn along which said sample fluid flows.
6. The sensor of claim 5 further comprising a reagent layer in communication with said sample cavity.
- 20 7. The sensor of claim 1 wherein said at least one vent comprises two vents being placed proximate to each other to form a bottleneck region for controlling a flow of said sample fluid.
8. The sensor of claim 1 wherein said at least one test region is selected from the group consisting of an electrode and a reagent area.
- 25 9. The sensor of claim 1 wherein said at least one test region comprises two electrodes.
10. The sensor of claim 9 further comprising a dielectric material covering edges of said two electrodes
- 30 11. A method for collecting sample fluid and positioning sample fluid in a test sensor for analysis of said sample fluid, the method comprising the acts of:

Substitute Specification – Clean Version

accepting said sample fluid within a sample cavity via capillary action; and
directing said sample fluid through said sample cavity toward at least one test
region of said sensor using at least one sample guide edge provided on at least one
vent venting said sample cavity.

5 12. The method of claim 11 wherein accepting said sample fluid comprises
accepting said sample fluid at a fluid inlet area.

 13. The method of claim 11 wherein said at least one test region is selected
from the group consisting of an electrode and a reagent area.

 14. The method of claim 11 wherein said at least one test region comprises
10 two electrodes.

 15. The method of claim 11 wherein said at least one vent comprises two
vents.

 16. The method of claim 15 wherein said two vents are placed at staggered
positions within along said sample cavity and further comprising directing said
15 sample fluid along a fluid pathway.

 17. The method of claim 16 wherein said test sensor is provided with a
reagent disposed along said sample cavity, wherein said fluid pathway is tortuous, and
further comprising mixing said test fluid with said reagent as said sample fluid is
directed along said fluid pathway.

20 18. A sensor for analysis of a fluid sample comprising:
a sample cavity for accepting sample fluid, said sample cavity having an fluid
inlet;

 first and second vents within said sample cavity, said first and second vents
having respective first and second vent edges and being disposed along a fluid
25 pathway of said sample cavity such that said first vent is closer to said fluid inlet than
said second vent is;

 a first reagent area disposed along said sample cavity beneath said first vent;
and

 a second reagent area disposed along said sample cavity beneath said second
30 vent.

Substitute Specification – Clean Version

19. The sensor of claim 18 wherein said first and second vents are spaced along said fluid pathway such that sample fluid entering said fluid inlet contacts said first and second vent edges in succession.

20. The sensor of claim 18 wherein said first reagent is adapted to react with said sample fluid for a first optimum reaction time and said second reagent is adapted to react with said sample fluid for a second optimum reaction time, said second optimum reaction time being less than said first optimum reaction time.

21. The sensor of claim 18 further comprising additional vents having vent edges and being disposed along said fluid pathway.

22. The sensor of claim 21 further comprising additional reagent areas disposed along said sample cavities respectively beneath said additional vents.

23. A method for analyzing a fluid sample comprising:

accepting said sample fluid within a sample cavity via capillary action, said sample cavity having a fluid inlet and first and second vents disposed along a fluid pathway, said sample cavity further having a first reagent disposed beneath said first vent and a second reagent disposed beneath said second vent, said first and second vents having first and second vent edges;

guiding said fluid sample along said fluid pathway via capillary action such that said fluid passes said first vent before passing said second vent; and

filling said sample cavity such that said sample fluid first fills a first volume beneath said first vent and later fills a second volume beneath said second vent.

24. The method of claim 23 wherein a time delay between the time at which said sample fluid fills said first volume beneath said first vent and the time at which said sample fluid fills said second volume beneath said second vent is greater than about three seconds.

25. A sensor for analysis of a fluid sample comprising:

a base layer;

an electrode layer supported by said base layer, said electrode having a first electrode and a second electrode, said first and second electrodes respectfully extending from first and second electrode leads and having central portions;

Substitute Specification – Clean Version

a cover layer disposed above said electrode layer, said cover layer having a projection defining a sample cavity;

a fluid inlet area in fluid communication with said sample cavity; and

5 first and second vents, said first vent having a first guide edge and said second vent having a second guide edge opposing said first guide edge, said first and second guide edges opposing each other above at least one of said central portions of said first and second electrodes.

26. The sensor of claim 25 wherein said electrodes have central portions, an intermediate area between said first and second opposing guide edges being
10 disposed above one of said central portions of said electrodes.

27. A sensor for analysis of a fluid sample comprising:

a sample cavity having a fluid inlet area, said sample cavity adapted for being filled via capillary action and having a vent, said vent having at least one sample guide edge for guiding fluid under capillary action within said sample cavity during
15 filling of said sample cavity.